

Do online learning and flipped classrooms have better outcomes than face-to-face, teacher-guided learning?

What are the advantages of a flipped classroom for learning?

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Many instructors in the health professions and beyond are shifting to a flipped classroom. This means that students watch a lecture on video before coming to class, and then spend time in class working on an interactive activity related to the content in the video. The rise of the flipped classroom has occurred in response to the realization that the traditional classroom, where a teacher lectures to students, creates a passive learning environment that focuses on memorization rather than deep

understanding. The flipped classroom aims to actively engage learners and prompt them to construct meaning and apply concepts.

Implementation of a flipped classroom can vary. For example:

- Before class, students watch a prerecorded lecture or several short lectures, and do an individual online quiz to test their comprehension after watching the video(s).
- During class, students participate in a small group project or pair shares, discuss and analyze information, ask questions, or engage in problem-based learning exercises based on the material they viewed before class.

The rise of the flipped classroom has been prompted by advances in technology to support video-based, asynchronous lecture delivery, and also appreciation of theories of learning and empirical evidence suggesting that passive lectures are not optimal to promote learning. Listening to lectures in the classroom without related engagement activities does not promote students' skills in important and more recently appreciated domains such as problem solving, teamwork, and communication.

What are the educational underpinnings of the flipped classroom?

The flipped classroom aligns with concepts and theories about how learning occurs.

- **Individualized learning:** The flipped classroom allows lectures to be self-paced and student guided. As students watch a video lecture individually, they can start/stop and replay sections as needed to facilitate understanding. They can pause to reflect on information and how it connects to other material.
- **Active learning:** lectures constitute a passive learning format in which students recall only 20% of what they have heard. The flipped classroom requires active student participation because the classroom time is entirely structured around a learning activity that engages students. Modeling by the instructor or other students further enhances learning in the classroom activity.
- **Application of knowledge:** lectures transmit factual knowledge from the teacher to the student. With a flipped classroom, the learner arrives to class prepared with knowledge about the topic, and the classroom activity requires application of that knowledge through discussion, case analysis, debates or problem solving with new scenarios.

- **Student-centeredness:** The flipped classroom is student centered rather than teacher centered. Student motivation can be enhanced due to accountability to peers in the classroom and the application of concepts to relevant problems.
- **Self-directed learning:** The flipped classroom promotes self-directed learning skills and behaviors by granting students autonomy as they decide how and when to watch videos, and how much time to devote to review content they feel they need to learn. Classroom activities are also designed to allow student-directed decisions about how to accomplish the task. Students thus feel more in control than in a traditional lecture, and gain skills in independent learning and managing personal learning through reflection and decision making, which are metacognitive skills important for lifelong learning.

What is the evidence that supports use of a flipped classroom?

Student opinions of the flipped classroom vary. Some students prefer in-person lectures to online, remote lectures. Variation in student opinions about the flipped classroom also reflects the varied ways in which the flipped classroom model is implemented. Small studies suggest learning benefits but there are no large studies proving its benefit.

How can I incorporate the flipped classroom into my educational practice?

- Design video lectures carefully for individual student viewing so that the technology is reliable, and the content aligns with self-assessments and classroom activities. Khan Academy is the most well-known example of how instructional videos can be designed differently than a traditional lecture to engage the audience watching remotely.
- Add an active learning component to the video, such as a self-assessment quiz, to facilitate students' reflection and identification of gaps in their understanding.
- Ensure active student engagement with the content during the classroom-based activity through thoughtful decisions about the format and expected work product.
- Give students clear expectations up front about how the success of the classroom activity depends on them spending adequate preparation time with the videos. Without the necessary knowledge, they cannot effectively engage in the classroom activity.

Questions for consideration.

- What are the necessary design features of a flipped classroom that best promote learning?
- How can videos be optimally designed to prepare students for classroom activities in a flipped model?

References

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